



BD 95

High-capacity disc stack centrifuge for biodiesel production

The Alfa Laval range of centrifuges for the vegetable and animal oils refining industries is continuously updated to incorporate the advantages of current developments in materials, mechanical design and fluid dynamics.

The BD 95 (BDPX 718CGV-14CERY/CERX) is a version of one of the units specially developed for biodiesel production. It is the second-largest machine in this range and is ATEX approved. It comes in two versions for two different process stages.

Applications

- Separation of methyl ester and glycerol BD 95X
- Washing of methyl ester BD 95Y

Performance

The BD 95 is designed for a plant producing biodiesel fuel from up to 800 tons/day of vegetable oil.

The table below shows nominal capacities. Actual throughputs vary according to the type of oil to be treated.

Methyl ester/glycerol separation	46,000 l/h
Methyl ester washing	42,000 l/h

Standard design

The machine consists of a frame with a base that contains a horizontal drive shaft, worm gear, lubricating oil bath, and hollow vertical bowl spindle. The bowl is fixed on top of the spindle, inside the space formed by the upper part of the frame, the solids collecting cover, and the frame hood. The hood carries the liquid discharge system. All parts in contact with the process liquid are made of stainless steel.

The bowl is a solids ejecting disc type, with an automatic hydraulic operating system for "shooting". The flameproof, standard electric motor is suitable for variable frequency drive. The BD 95X is designed for use in ATEX zones 1 and 2. The BD 95Y is designed for use in ATEX Zone 2, non-flammable process liquid.

Design features

The BD 95 is based on a unique, semi-hermetic design concept. The hermetic, bottom-fed inlet ensures a gentle, non-destructive acceleration of the feedstock up to full bowl



BD 95

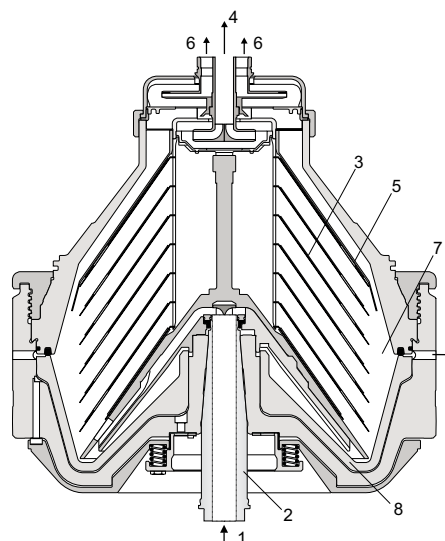
speed. The outlets on the heavy and light phases are open, reducing the pressure drop across the separator. The feed-pressure requirement of the machine is therefore low. The outlets are equipped with stationary paring discs for removal of the different phases under pressure. With the working environment in mind, the BD 95 is designed to operate at low noise levels. This is achieved by means of a rubber-damped bearing assembly, jacketed frame and an outer bowl design engineered for low wind noise.

Standard equipment

Each BD 95 comes complete with control unit, flameproof electric motor, inlet and outlet connections, auxiliary equipment, a spare parts kit and a set of tools.

Operating principles

The process liquid to be separated is fed (1) into the separator bowl from the bottom through a hollow spindle (2), and enters the disc stack (3). The heavy phase and heavy sludge are forced towards the periphery of the bowl, while the light methyl ester phase flows towards the centre of the bowl, from where it is pumped out (4) for further processing. The heavy phase is led over a top disc (5) into a chamber where a paring device pumps it out of the separator (6). Sludge collects in the sludge space (7) and is discharged intermittently and automatically. The discharge is achieved by a hydraulic system, which at preset suitable intervals forces the sliding bowl bottom (8) to drop down, thereby opening the sludge ports at the bowl periphery. The sludge is collected in the frame, and leaves the centrifuge via a cyclone.



Typical bowl drawing for a solids ejecting hermetic centrifuge. Drawing details do not necessarily correspond to the centrifuge described.

Utilities consumption

Electric power	max. 46 kW
Operating liquid during discharge	10 l/h
Cooling water, jacket	300 l/h
Cooling water, oil	80 l/h
Sealing liquid	100 l/h
Flushing liquid, per discharge	25–30 l

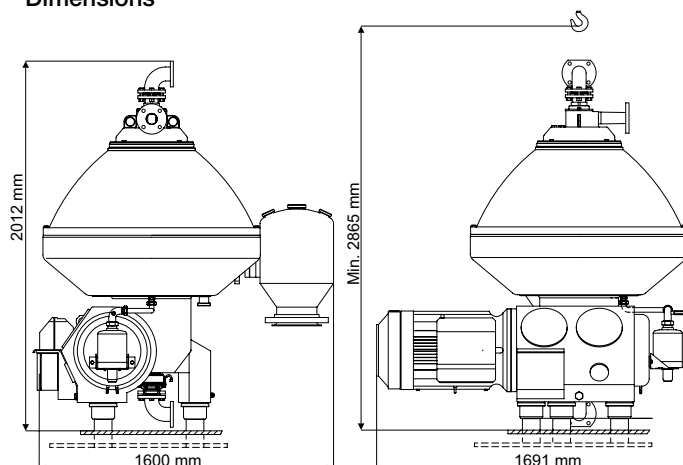
ATEX design codes

BD 95X: EX II 2 G T4 X for zone 1 & 2	Inert gas design
BD 95Y: EX II 3 G T4 X for zone 2	Electrically protected

Material data

Bowl body, hood and lock ring	s.s. 1.4418
Frame top part and hood	s.s. 1.4401 UNS 31600
Frame bottom part	Cast iron
Gaskets and O-rings	Fluorocarbon rubber

Dimensions



Technical specifications

Throughput capacity	max. 52 m³/h
Bowl speed	4,300 rpm
Bowl volume	66 l
Sludge space	17 l
Motor speed synchron. 60.7 Hz	1,821 rpm
Motor power installed	52 kW
Starting time	6–8 min
Stopping time without brake	80 min
Inlet pressure at 46 m³/h	300 kPa
Outlet pressure, methyl ester phase	min. 200 kPa
Outlet pressure, heavy phase	800 kPa
Sound pressure	78 dB(A)
Overhead hoist lifting capacity	min. 1,200 kg

Connections

Product inlet	Flange DN 65 (DIN 2576), 2½" (ANSI 150)
Methyl ester outlet	Flange DN 65 (DIN 2576), 2½" (ANSI 150)
Heavy phase outlet	Flange DN 50 (DIN 2576), 2" (ANSI 150)
Solids cyclone	Flange DN 200 (DIN 2642), 8" (ANSI 150)

Shipping data (approximate)

Separator incl. bowl and motor	2,650 kg
Bowl	1,050 kg
Gross weight	3,200 kg
Volume	5.4 m³

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com